



Southeast Michigan Transportation Operations Center

December
2016

MONTHLY
PERFORMANCE
MEASURES



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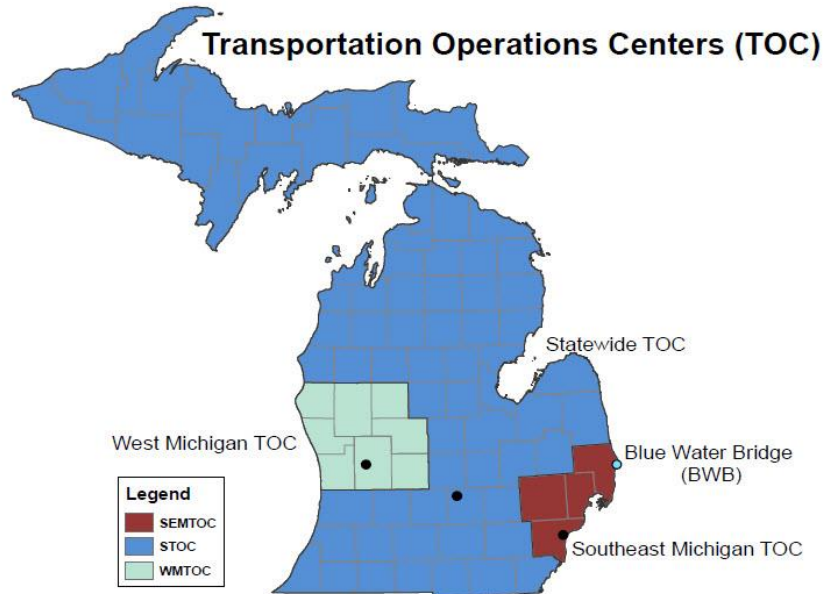
MDOT'S MISSION:

Providing the highest quality integrated transportation services for economic benefit and improved quality of life.

Report Compiled By **AECOM**

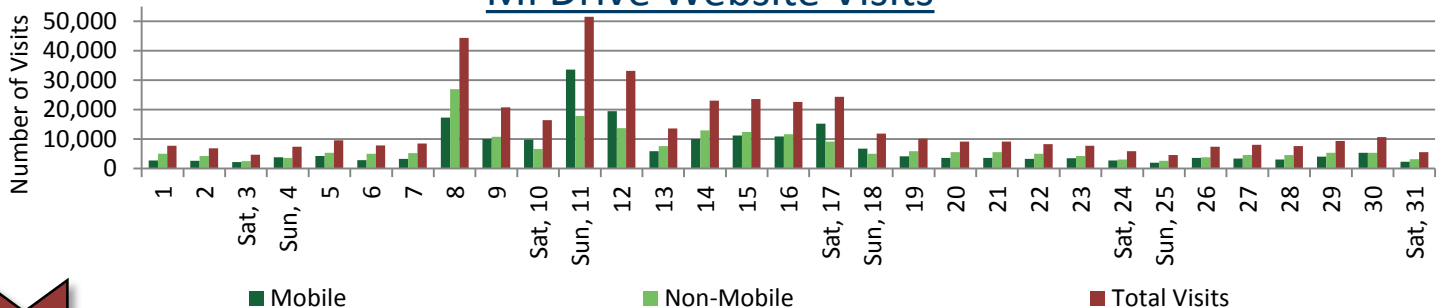
The Statewide TOC (STOC) is responsible for traffic operations along more than 1,200 miles of freeway in the state of Michigan. STOC has intelligent transportation systems (ITS) equipment throughout five Michigan Department of Transportation (MDOT) regions, including: Bay, University, Southwest, Superior, and North.

The West Michigan TOC is responsible for traffic operations along 45 miles of freeway, while also covering 18 non-freeway trunkline miles in the greater Grand Rapids area and Grand Haven.



The Southeast Michigan TOC (SEMTOC) is a hub of ITS technology applications at MDOT. It is a world-class traffic management center where staff oversees a traffic monitoring system composed of 200 freeway miles, including the Blue Water Bridge (BWB) that connects I-94 and I-69 in the United States with Highway 402 in Canada. The BWB is one of the fastest links between the Midwest and Ontario.

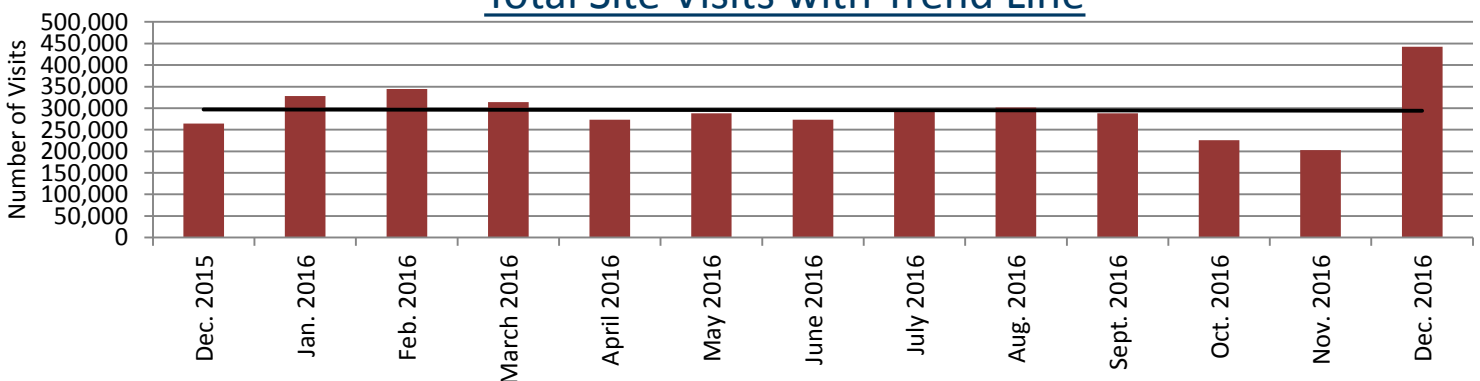
Mi Drive Website Visits



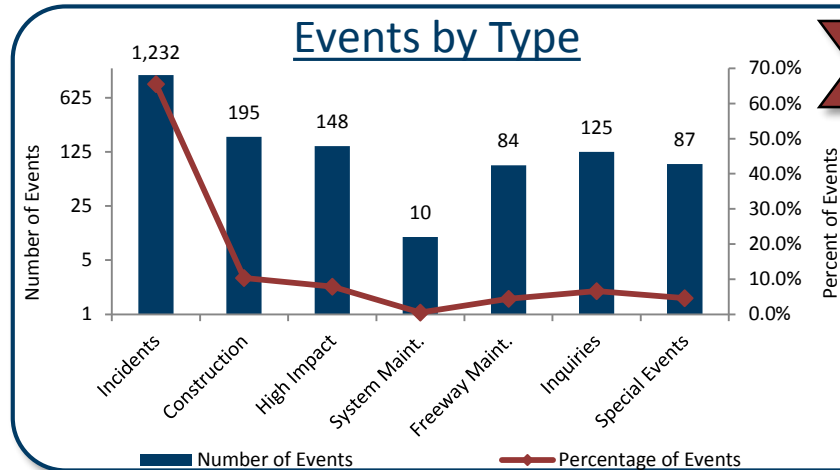
A "visit" is counted each time a user accesses the www.michigan.gov/drive website, regardless of the number of pages viewed within the site. "Mobile" visits are those where the site is accessed using a mobile device, while "Non-Mobile" visits are those where the website is accessed from a computer.

Below is a graph showing the total number of visits to Mi Drive and the trend for a 13-month period.

Total Site Visits with Trend Line



- Event:** A task in which the control room operator (CRO) is involved. Multiple categories of events exist (e.g., Incident, Construction, Special Event).
- Call:** Any phone call that comes into or goes out of the control room. Multiple calls may be associated with one event.
- Incident:** An event that impacts the shoulder, lane(s) or a ramp of a state of Michigan trunkline (e.g., accident, vehicle fire, debris or police situation).

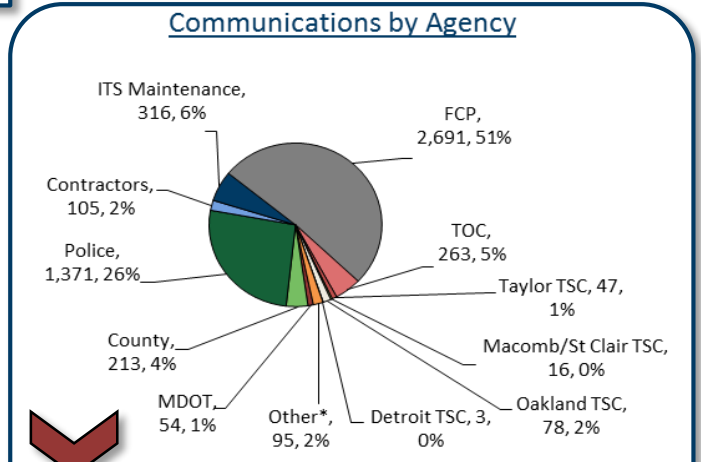
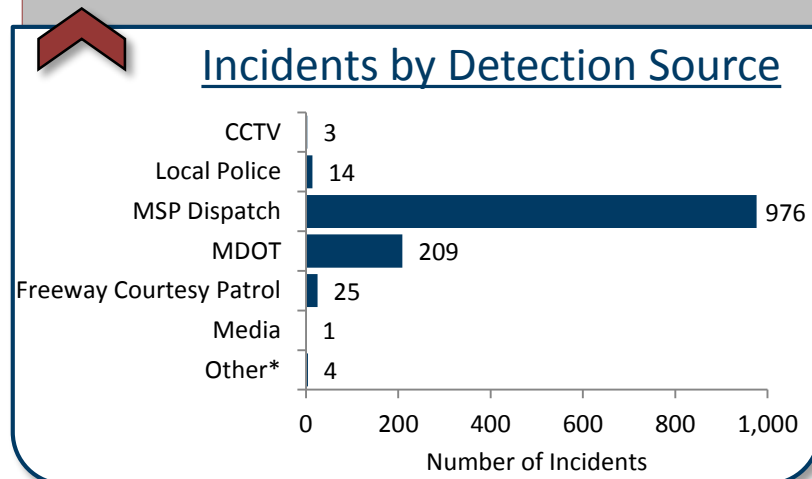


Control room **Events** consist of: construction, incidents, high impact (see definition on page 6), system maintenance (software and hardware), freeway maintenance (lighting, field equipment, potholes, sweeping, etc.), traffic inquiries (public and agencies), special event coordination, and Freeway Courtesy Patrol (FCP) assists (excluded from this table and described on page 4).

CROs logged **1,881 Events** along the freeways, excluding FCP assists. The top **Event** categories are shown in the chart.

CROs rely on various sources to detect **Events** that occur along the freeways. When an **Event** is detected, the CRO is required to note which detection source was used. This not only ensures that the **Event** was detected by a reliable source, but also provides insight as to which sources are utilized most frequently.

*Other includes Mi Drive, Twitter and contractors.

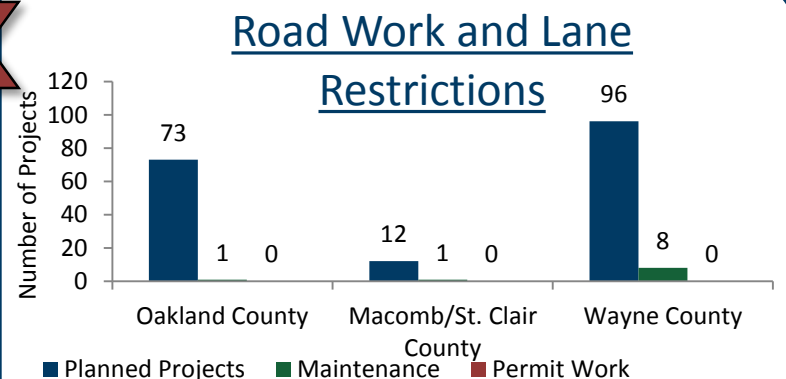


CROs managed **5,252 Communications** this month. The majority of all **Communications**, **51 percent**, were between the control room and the **FCP**.

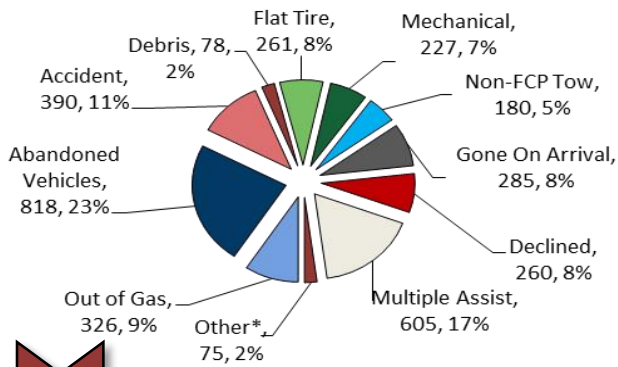
*Communications refer to phone calls and radio transactions.

*Other includes Airport, Border, City of Detroit, Fire, Media, Special Event Venues and Transit Agencies, and DTMB.

CROs are responsible for monitoring and managing traffic operations along the freeways. It is critical to know where road work and lane restrictions are taking place and the impact that they may have on freeway operations. The mobility coordinator maintains frequent communication with MDOT staff, consultants and contractors to ensure that the CROs are kept up-to-date on the locations and impacts of road work and lane restrictions that include Planned Projects (Construction) and Maintenance (Repairs).



Assists by Type

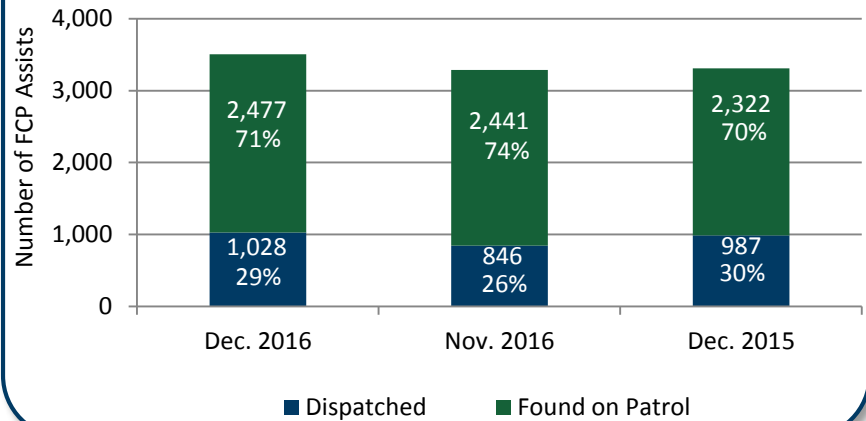


The FCP is a federally funded service provided to the public to assist stranded motorists, provide traffic control for **Incidents** and improve mobility along the freeways by keeping travel lanes clear of debris and disabled vehicles. The FCP had a total of **3,505** assists. The majority of the assists (**23 percent**) were identifying **Abandoned Vehicles**.

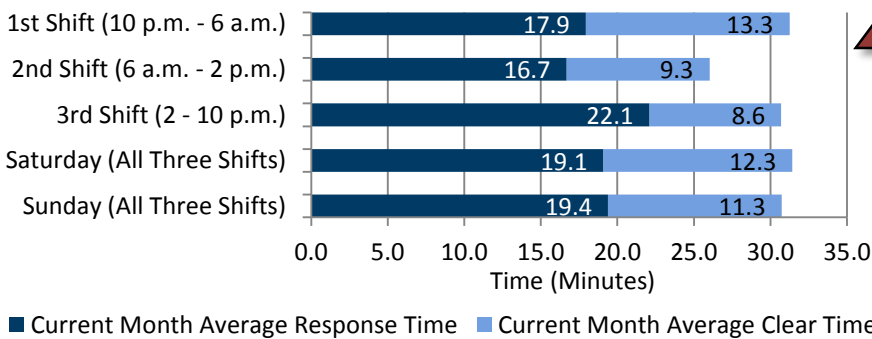
*Other includes Cellular Assists, FCP Tow, Gave Directions, Traffic Policing, and Motorist Transport.

FCP drivers are required to patrol their routes when not actively assisting a motorist. While on patrol, the driver may find an **Event** that the control room is not yet aware of. He/she will contact the control room via radio and the **Event** will be logged as "Found on Patrol." Likewise, if the CROs detect an **Event** that may require FCP involvement, he/she will dispatch the driver to the **Event** location and log it as "Dispatched."

FCP Assists Dispatched vs. Found on Patrol



Average Assist Times



The response and clear times for all FCP assists are logged by CROs. The average response and clear times for the current month are depicted on the graph to the left.

Shift response times may differ greatly due to the number of units on duty and their coverage areas. (Weekends and 1st shifts only have two units on the road covering all zones).

The FCP patrols more than **320** miles of freeway in southeast Michigan. They provided the most assistance along **I-75 (865 assists)**. On **I-696**, they experienced the highest assist density (**18.5 assists per mile**).

Freeway	Miles	Total Assists	Assist Density (assists per mile)	Avg. Response Time (minutes)	Avg. Clear Time (minutes)
I-75	87.6	865	9.9	19.7	11.5
I-94	60.7	705	11.6	19.7	8.8
I-96	34.0	473	13.9	16.3	10.5
I-275	37.5	276	7.4	23.1	6.6
I-696	28.7	531	18.5	20.2	10.0
M-59	24.0	76	3.2	9.6	4.7
I-375	1.2	15	12.5	9.8	3.9
M-10 (Lodge)	17.9	277	15.5	17.8	12.6
M-14	6.4	63	9.8	24.2	6.6
M-39 (Southfield)	14.2	172	12.1	17.8	8.6
M-5 (Grand River)	10.3	25	2.4	33.4	3.6
M-8 (Davison)	2.2	27	12.3	10.8	5.9

Most-Utilized DMS for Unique Messages

Location	# Unique Messages	% of Total Unique Messages
Eastbound I-94 east of Belleville	68	6.60%
Eastbound I-696 at Farmington	66	6.41%
Northbound I-75 at Woodward Heights	54	5.24%
Westbound I-696 at Bermuda	39	3.79%
Westbound I-696 at Ryan	39	3.79%

There were **1,030** unique messages displayed throughout the ITS network. A "unique message" may be an **Incident**, AMBER Alert, construction or special event message.

Travel-time messages are routinely displayed when unique messages are not active. Travel times are updated every 3 minutes.

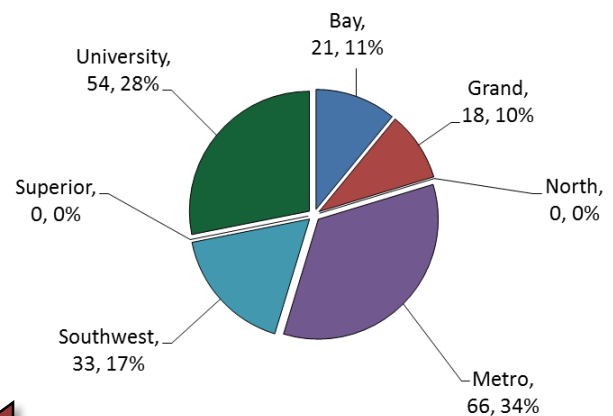
ITS Field Device Availability

Device Type	Availability		Total
	Functional	Non-Functional	
CCTV	288	8	296
MVDS	332	11	343
DMS	114	2	116

CROs track the average daily availability of all system devices so that timely maintenance can occur. The reliability of the devices in turn ensures that CROs have tools available to accurately provide traffic conditions to the motoring public.

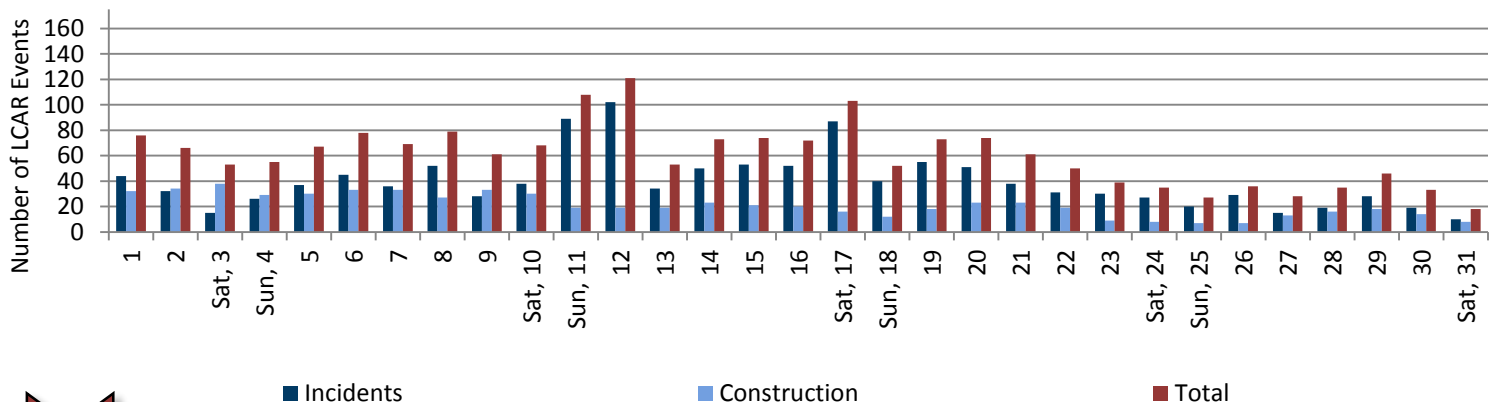
- Closed Circuit Television (CCTV) Cameras
- Microwave Vehicle Detection Systems (MVDS)
- Dynamic Message Signs (DMS)

Stuck in Traffic Notifications



Travelers with smartphones or Web-enabled mobile devices can go to the Mi Drive website and click on the "Stuck in Traffic?" link to report traffic delays or incidents. There were **192 Stuck in Traffic notifications** for the state of Michigan; the graph above shows how many were reported per MDOT region.

LCAR Posts Sent to the Website



Construction and **Incident** information is posted to the Mi Drive website using the Lane Closure and Restrictions (LCAR) tool. Each post that was sent to the website from Metro Detroit is shown in the chart above.

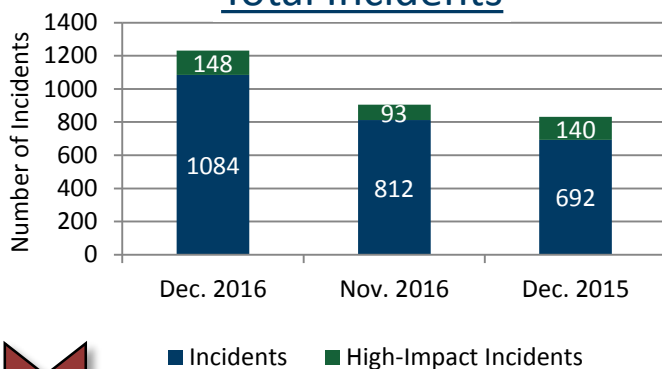
Incidents by Freeway

Freeway	Miles	December 2016			November 2016			December 2015		
		Total Incidents	Incidents per Mile	Average Duration	Total Incidents	Incidents per Mile	Average Duration	Total Incidents	Incidents per Mile	Average Duration
I-275	37.5	80	2.13	48.5 min	54	1.44	46.9 min	62	1.65	53.6 min
I-375	1.2	6	5.00	25.9 min	2	1.67	34.2 min	1	0.83	47.0 min
I-96 (Jeffries)	34	124	3.65	77.0 min	116	3.41	46.2 min	104	3.06	40.0 min
I-696 (Ruether)	28.7	200	6.97	44.6 min	128	4.46	37.9 min	114	3.97	42.2 min
I-75 (Chrysler/Fisher)	87.6	305	3.48	41.8 min	243	2.77	56.0 min	214	2.44	49.7 min
I-94 (Ford)	60.7	318	5.24	44.2 min	209	3.44	43.7 min	208	3.43	49.9 min
M-10 (Lodge)	17.9	89	4.97	42.1 min	57	3.18	46.4 min	58	3.24	47.0 min
M-14	6.4	11	1.72	51.8 min	7	1.09	62.5 min	11	1.72	43.2 min
M-39 (Southfield)	14.2	87	6.13	40.3 min	71	5.00	44.5 min	40	2.82	46.4 min
M-59	24	1	0.04	19.0 min	2	0.08	16.4 min	2	0.08	168.5 min
M-8 (Davison)	2.2	5	2.27	39.7 min	4	1.82	61.7 min	9	4.09	74.4 min
Regional Average Duration				46.9 min			47.7 min			47.7 min

I-94 experienced the highest total **Incidents**; however, **I-696** had the greatest incident-per-mile rate. The longest average incident duration occurred along **I-96**.

The data recorded includes all incidents that were managed by SEMTOC and involve an incident response plan.

Total Incidents



There were a total of **1,232** total **Incidents**, **12.0 percent** of which were high-impact.

A *high-impact incident* is one that results in a total freeway closure in one direction, a freeway-to-freeway ramp closure, or an incident leaving only one lane open.

The majority of high-impact incidents, **32 percent**, occurred along **I-94**. High-impact incidents have the greatest effect on the freeway system. These incidents have an elevated response plan to best manage incidents to reduce UDC (user delay costs) and increase mobility.

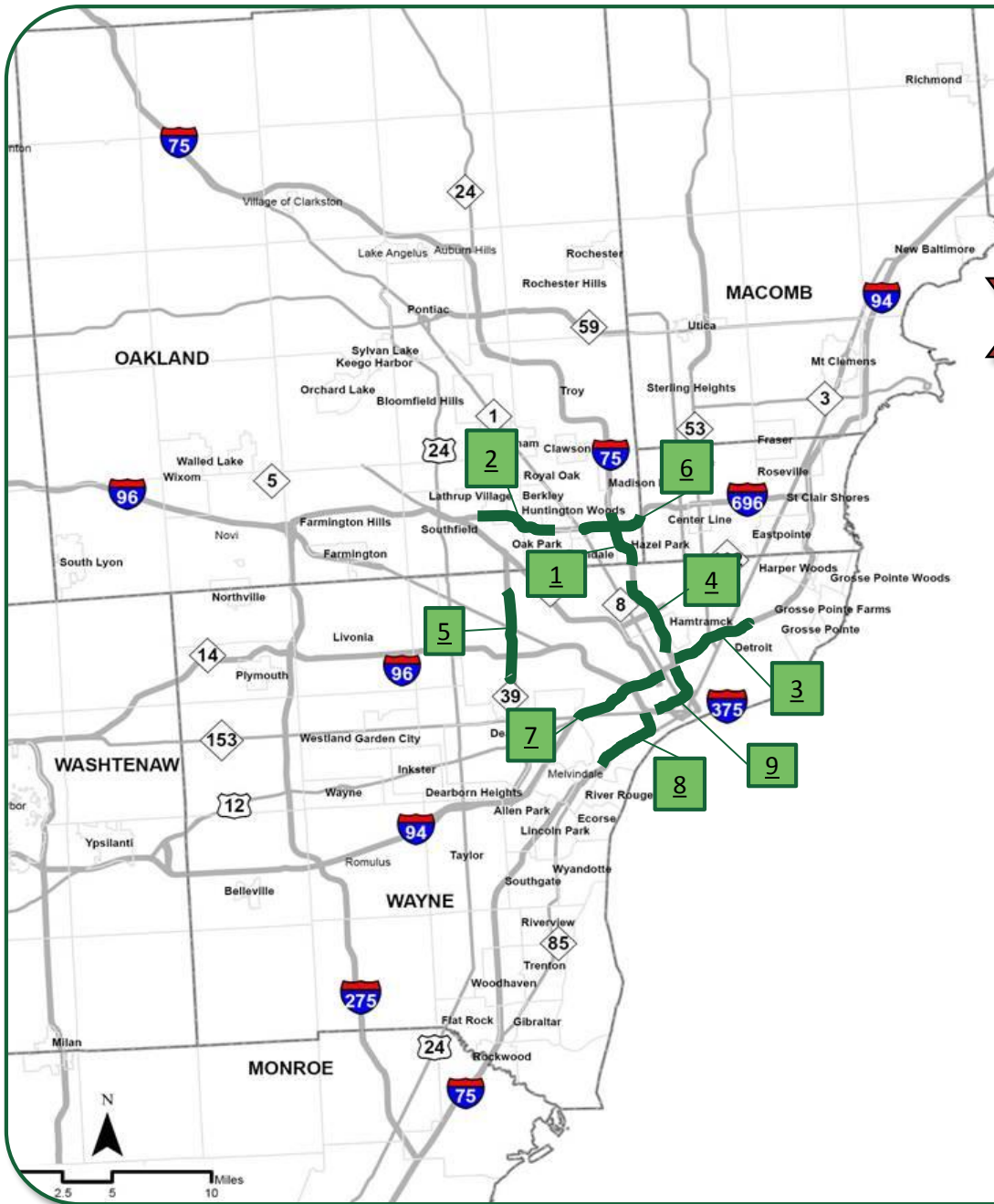
High-Impact Incident Activity

	December 2016	November 2016	December 2015
Freeway Closures			
All Lanes Closed in One Direction	17	9	18
Lane Closures			
Only One Lane Open	118	78	103
Ramp Closures			
Freeway-to-Freeway	13	6	19
Total	148	93	140

Top Duration Incidents

Location	Date	Duration	Details
Eastbound I-96 at Evergreen	Dec. 25	769 min.	Rollover blocking the right lane and shoulder.
Southbound M-39 at I-96	Dec. 11	261 min.	Crash blocking the left shoulder.
Northbound I-75 at US-24	Dec. 10	235 min.	Crash closing the freeway.
Southbound M-10 at Lahser	Dec. 25	215 min.	Rollover closing the freeway.
Westbound I-94 at Gratiot (Detroit)	Dec. 8	204 min.	Disabled vehicle blocking right lane and shoulder.

The top duration **Incident** occurred along **I-96** and lasted **769** minutes, compared to the average incident duration on **I-96** of **77.0** minutes.



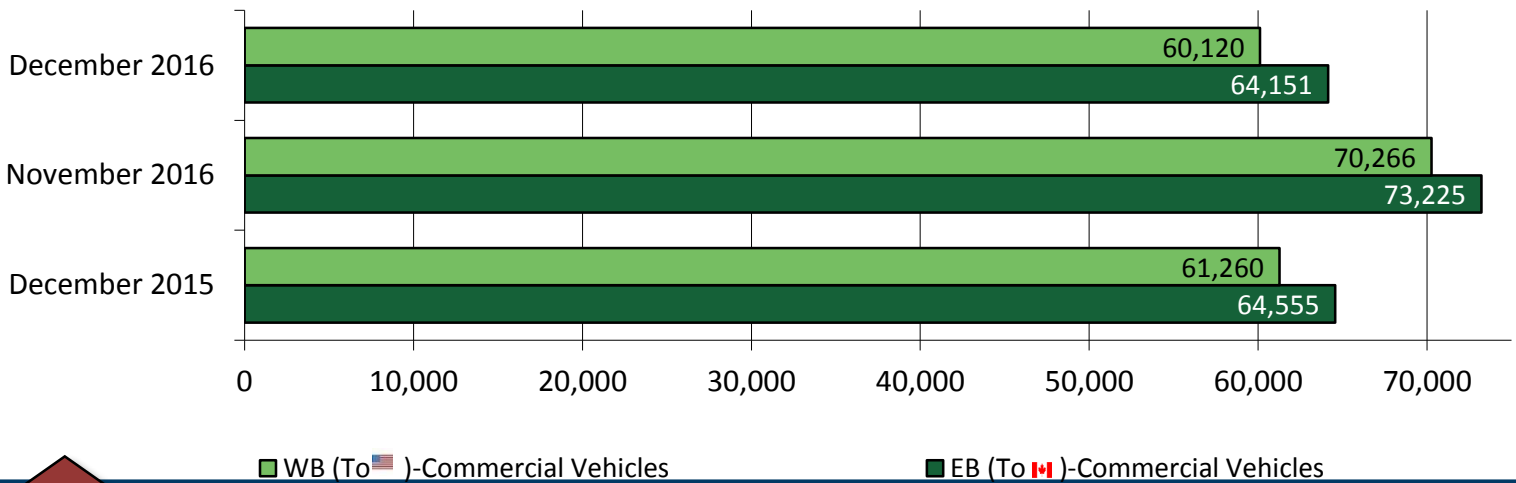
The **Freeway Incident Hot Spot** locations for the month are identified on this map. Hot spot **Incidents** may include accidents, debris or weather-related events. Details for each location portrayed on the map can be found in the "Hot Spot Activity" table below.

The **Freeway Incident Hot Spot** locations portrayed on the map are described in this table. The data recorded includes all incidents that were managed by SEMTOC and involve an incident response plan.

Hot Spot Activity

Location Number	Location	Number of Incidents	Percent of Incident Total
1	I-75 between 11 Mile and 8 Mile	80	6.5%
2	I-696 between Coolidge and Evergreen	80	6.5%
3	I-94 between I-75 and Conner	73	5.9%
4	I-75 between 7 Mile and Clay	60	4.9%
5	M-39 between 7 Mile and Plymouth	55	4.5%
6	I-696 between Dequindre and Woodward	55	4.5%
7	I-94 between Lonyo and Woodward	53	4.3%
8	I-75 between I-96 and Fort/Schafer	45	3.7%
9	I-75 between I-94 and Rosa Parks	44	3.6%

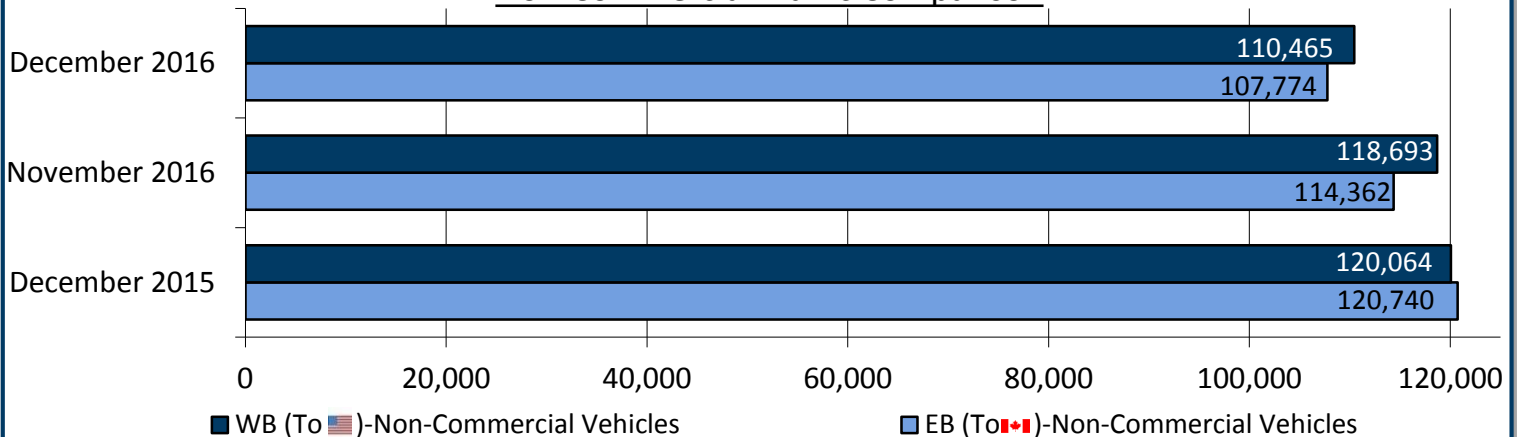
Commercial Traffic Comparison



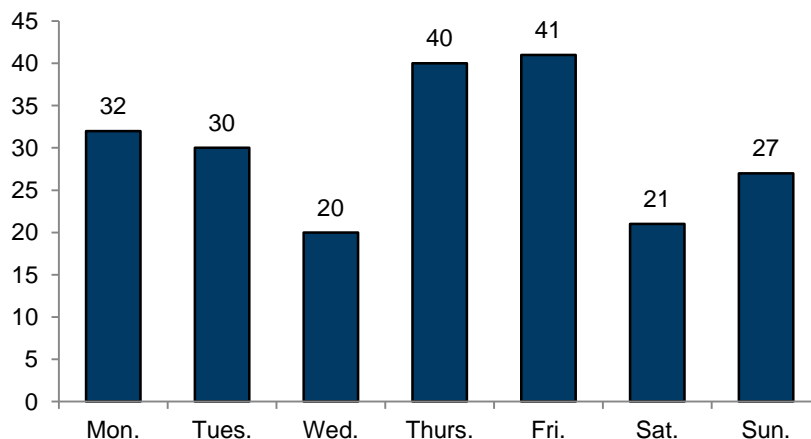
Located near the I-94/I-69 interchange, the Blue Water Bridge forms a critical gateway linking Canada and the United States. Listed above and below is a traffic analysis for the current month's traffic report by vehicle type* compared to the previous month and current month last year.

*The chart above shows the quantity of commercial vehicles (e.g., tractor-trailer) while the chart below shows the quantity of non-commercial vehicles (e.g., personal vehicles).

Non-Commercial Traffic Comparison



Traffic Flow Efficiency



To manage traffic from Canada to the United States, CROs change the approaching DMS to manage traffic flow efficiently.

The chart illustrates the CROs sign changes by day of week.